Promoting DG-CHP in New York State Industrial Sector

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An Integral Part of
NYSERDA's DG-CHP Program

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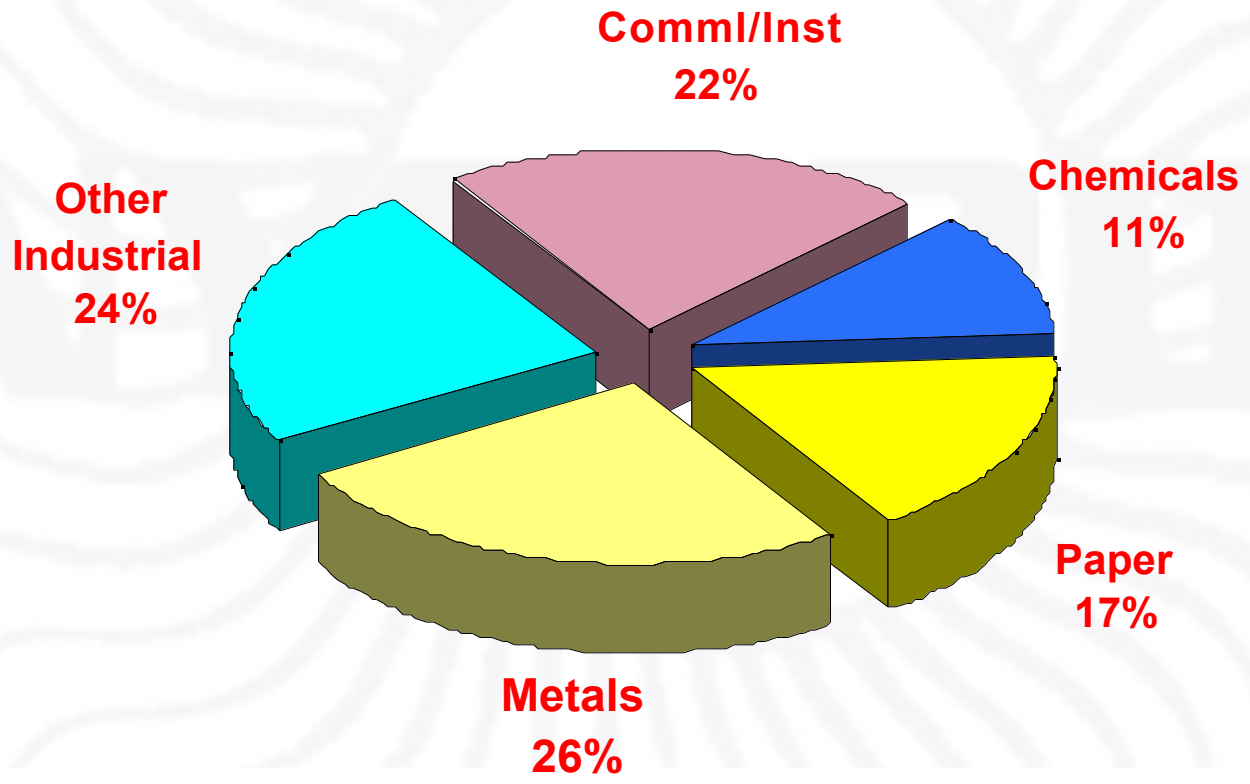
New York's Existing CHP Capacity: 5,070 MW

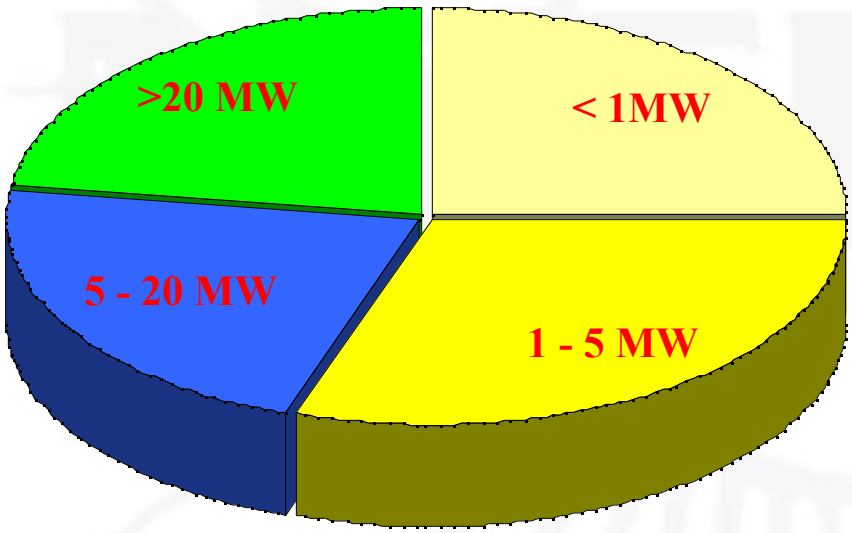
Industrials Represent 78% of Existing CHP in New York



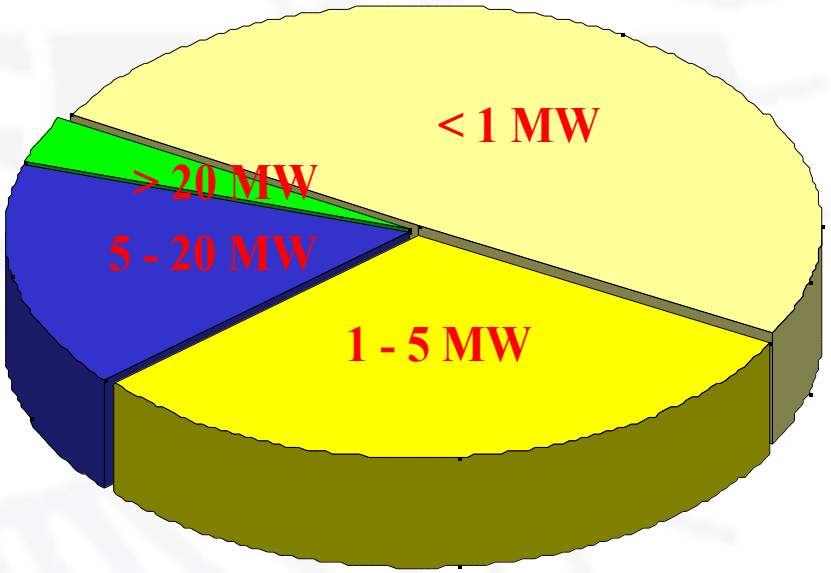
Source: Energy Nexus Group

New York's CHP Potential: 12,820 MW

Industrial Potential: 3600 MW
56% is in Systems Below 5 MW



Commercial/Institutional Potential: 9220 MW
81% is in Systems Below 5 MW



Source: Energy Nexus Group

NYSERDA's DG-CHP Program

- Promote DG technologies and CHP applications
- Funding: $15+ million per year
- The program supports:
  - studies to provide guidance and road mapping for further program development
  - development and demonstration projects to operate and evaluate new technologies and applications

DG-CHP Program Status

- Supporting over 20 development projects and over 40 demonstration projects and 10 feasibility studies
  - NYSERDA funding of $21 million (in ~$70 M)
  - Demonstration projects will install 43.5 MW of capacity for a peak demand reduction of 31.3 MW
- CHP applications in industrial, agricultural, institutional, commercial, and residential sectors

This Study - Promoting DG-CHP in NYS Industrial Sector

- Siting and Permitting of Smaller Systems - Task 1
  - Prepare a Guidebook
- Finding Ideal Sites - Task 2
  - Use of GIS as an Assessment Tool
- Valuation of Power Quality/Reliability - Task 3
  - Quantifying Costs and Evaluating DG Options

Local Codes, Siting, & Permitting

- Codes Don't Yet Address Many Newer CHP / Cleaner DG Technologies
- Zoning Issues May Arise ("noise, aesthetics, is this a permitted use"?)
- Local Codes Officials Unfamiliar with New Technologies
- New York Initiated its DG Rule Making

Local Codes, Siting, & Permitting

- Outreach, Education & Training Programs Are Underway
  - A number of outreach meetings have been held in collaboration with DOE
    - ✓NYC - August 13th
    - ✓Huntington, Long Island - August 14th,
    - ✓ Albany - November 7th and
    - x Buffalo - TBD
- More than 75 people attended the Albany event, more than 60 in New York City. A database of all contacts has been compiled

Local Codes, Siting, & Permitting

- Outreach Meetings and Outreach to Key Organizations and Local Officials (Ongoing)
- Active Participation in the DEC's Rule Making Process (Ongoing)
- Development of a Guidebook for Local Codes, Siting, Permitting Officials (Initiated)
- Development of Case Studies (To do)

Identification of Geographically Significant Factors – Partial List

Factor 1: Coincidence of Electric and Thermal Demand

- Industries by SIC and/or NAICS and/or industries with existing stand alone boilers

Factor 2: System/Societal Benefits

- load pockets, economic dev. zones, or brownfields

Factor 3: Infrastructure & Support

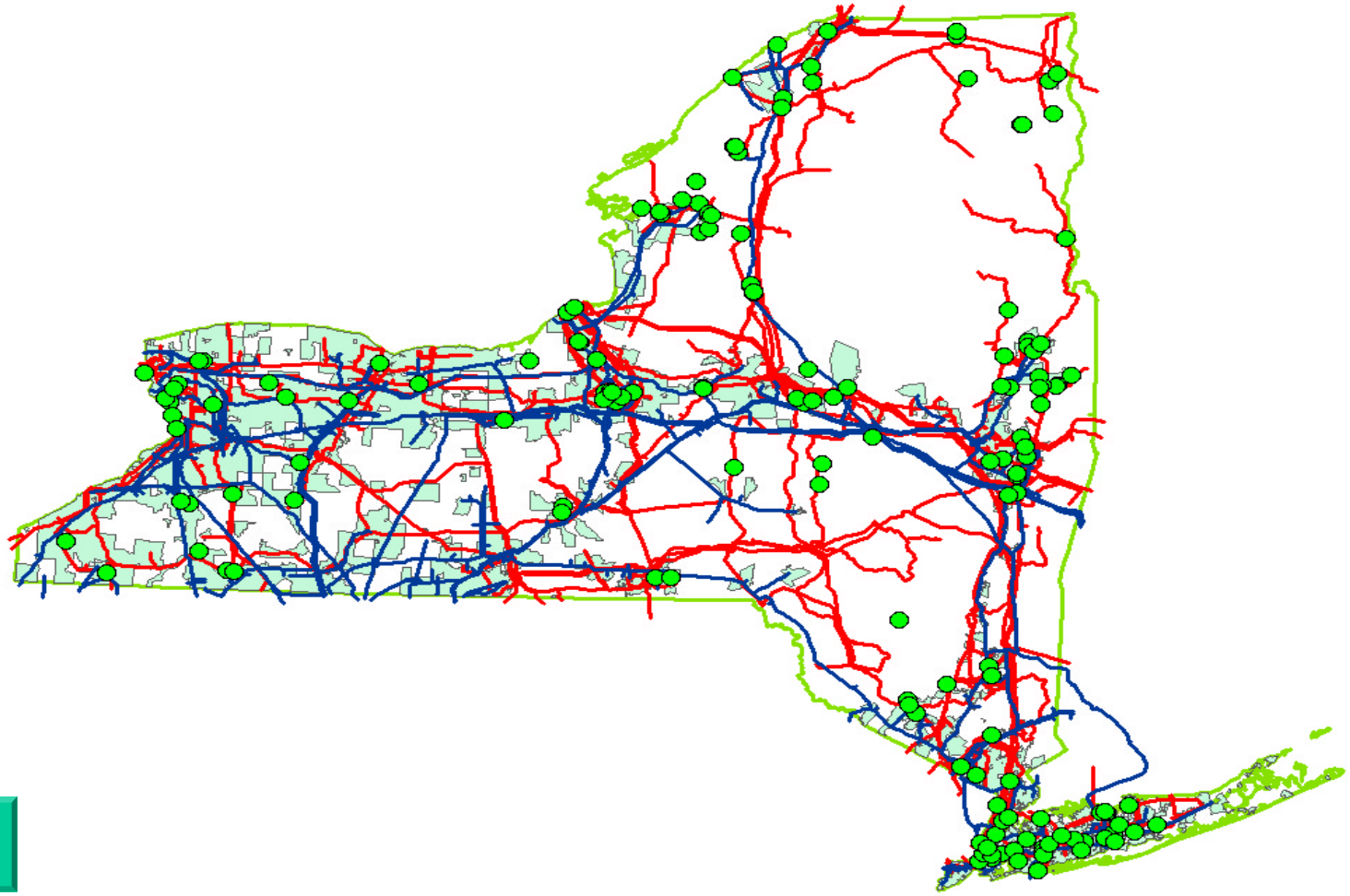
- Access to fuel (natural gas, landfill gas, adg, etc.)
- Appropriate zoning/land use ("neighborhood" profile)

Development of GIS Data Layers

Criteria Used:

- Relevant to identified selection criteria (e.g., access to fuel)
- Commonly available both in New York State and other US states
- Reasonable level of effort required to convert into a GIS compatible format

Sample GIS Map



GIS Data Layers Developed or In Progress

General Reference Layers:

- NYS county and municipal boundaries
- Color quads (DRG's)
- Orthoimagery (DOQQ's)
- Control Zones
- Existing CHP Sites
- Nuclear Power Plant locations
- Gas and Electric Transmission Lines
- Electric Franchise Areas

Candidate Site Locations:

- Boiler locations
- Industry locations (from commercial sources and the NYS Dept. of Labor) based on selected SIC codes

(continued)

GIS Data Layers Developed or In Progress

(continued)

Access to Fuel:

- Electric Franchise Areas
- Census Block Group Boundaries (with data on utility gas used as heating fuel)
- Point locations for industries using natural gas (property assessment records)

Societal Benefits:

- Empire Zones
- Energy Load Pockets
- Industrial Parks
- Brownfields Sites

Constraints:

- Floodplains
- Wetlands
- Historic Sites
- Schools

Power Quality Evaluation Approach

- Identify specific areas in New York State with power quality and reliability issues (*underway*)
  - T&D Reliability Study, Load Pocket Analysis, State Energy Plan, etc.
- Interview industrial and commercial users to determine economic impact of power interruptions and identify state of the art solutions under consideration (*underway*)
- Evaluate various DG options as potential solutions; compare to other commercially available options and gauge user acceptance of DG solutions (*pending*)

Interview Objectives

- Evaluate impact of power quality on operations
  - Process disruptions and restarts, Equipment damage, Lost productivity, quality, and business, health and safety
- Quantify the costs of power quality/reliability incidents
- Identify conventional solutions under consideration
- Understand economic decision criteria
- Gauge receptivity to DG-based solutions to power quality/reliability issues

Evaluate DG Solutions to Power Quality and Reliability Problems

- Identify DG-based options to power quality/reliability issues (focus on continuous duty solutions)
- Compare economics of DG options to conventional solutions
- Evaluate customer acceptance of DG options through follow-up interviews
- Develop portfolio of DG options for critical applications and markets

Support of DER Mission

- Develop the “next generation” of clean, efficient, and affordable DE technologies
- Document the energy, economic, and environmental benefits of DG by
  - identifying the needs
  - addressing local code, siting & permitting issues
  - documenting power quality and reliability concerns
- Implementing Deployment Strategies - Demonstrating the use of advanced DG technologies in 40 active projects
- Replicability in Other States

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